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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/898,082

07/05/2001

Tadatomo Suga

925-203

3209

23117

7590

06/06/2005

NIXON & VANDERHYE, PC
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EXAMINER

NGUYEN, JOSEPH H

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/898,082

Applicant(s)

SUGA, TADATOMO

Examiner

Joseph Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 20-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Yasumoto et al. (US 4,612,083).

Regarding claim 20, Yasumoto et al. discloses on figure 1f a semiconductor device comprising:

a first substrate 12 (col. 4, line 64) supporting a first insulating layer 16 (col. 4, lines 60-61) with a contact hole defined therein (hole filled with metal 20), and a first conductive material 20 (col. 5, line 61) filling in the contact hole in the first insulating layer and protruding above a surface of the first insulating layer (col. 5, lines 57-60);

a second substrate 12' (col. 6, lines 44-51) supporting a second insulating layer 16' with a contact hole defined therein, and a second conductive material 20' filling in the contact hole in the second insulating layer; and

wherein the first conductive material 20 that fills in the contact hole in the first insulating layer 16 and the second conductive material 20' that fills in the contact hole in the second insulating layer 16' are solid state bonded (col. 7, lines 3-55) to each other

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so as to directly contact one another in a bonded stated with no intermediate element therebetween.

Regarding claim 21, Yasumoto et al. discloses on figure 1e the second conductive material 20' filling in the contact hole in the second insulating layer 16' protrudes above a surface of the second insulating layer.

Regarding claim 22, Yasumoto et al. discloses in col. 6, lines 48-51 the first and second conductive materials 20, 20' are of the same material.

Regarding claim 23, the so-called concave surfaces of the respective first and second conductive materials only emerge in the intermediate step of the bonding process. After the two conductive materials are bonded together, these concave surfaces no longer exist in the final product as shown in figure 4 of the instant application. In other words, the so-called concave surfaces do not structurally distinguish the claim from Yasumoto et al. herein.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasumoto et al., and further in view of Kawai et al. (US 5,939,789).

Regarding claim 24, Yasumoto et al. discloses on figure 1f substantially all the structure set forth in the claimed invention except a clearance defined between the first and second insulating layers adjacent an area where the conductive materials being solid state bonded to one another. However, Kawai et al. discloses on figure 12c a clearance 8 (col. 11, line 32) defined between the first and second insulating layers 4 (col. 7, lines 17-20) adjacent an area where the conductive materials being solid state bonded to one another. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yasumoto et al. by having a clearance defined between the first and second insulating layers adjacent an area where the conductive materials being solid state bonded to one another for the purpose of implementing high precision, fine and high density wiring and providing satisfactory electrical conduction between layers (col. 11, lines 32-36, Kawai et al.).

Response to Arguments

Applicant's arguments with respect to claims 20-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

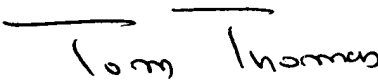
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (571) 272-1734. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's

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supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JN
May 31, 2005.


TOM THOMAS
SUPERVISORY PATENT EXAMINER

Search Notes

Application/Control No.

09/898,082

Examiner

Joseph Nguyen

Applicant(s)/Patent under
Reexamination

SUGA, TADATOMO

Art Unit

2815

SEARCHED

Class	Subclass	Date	Examiner
257	758,762	5/26/2005	JN
438	455,107	5/26/2005	JN

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
See copy of search history	5/26/2005	JN